

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 28

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte JEAN-PAUL RODUIT and GEORGES KALBERMATTEN

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Appeal No. 2001-1932  
Application No. 08/829,512

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HEARD: November 7, 2002

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Before LIEBERMAN, DELMENDO and POTEATE, Administrative Patent Judges.

POTEATE, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 2-19, which are all of the claims remaining in the application.

Claims 18 and 19 are representative of the subject matter on appeal. A copy of these claims is appended to this decision.

The references relied upon by the examiner are:

Suto et al. (Suto)                      5,142,057                      Aug. 25, 1992

Takeuchi et al., "Palladium-catalyzed carbonylation of  
N-Heteroaromatic chloride", Journal of Molecular  
catalysis, vol. 66, pgs. 277-288 (1991). (Takeuchi)

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Yagihara et al., "Wide-spectrum synergistic herbicidal binary compositions containing N-phenylpyridine-3-carboxamide derivatives for rice", Chemical Abstracts on-line, CA:109:68849, abs of JP 63-005,005 (January 11, 1988) (CA'849). (Yagihara)

Nishiyama et al., "Herbicidal chloro- or methylphenyl pyridyl ethers", Chemical Abstracts on-line, CA:73:130,894, abs of FR 1,582,125 (September 26, 1969) (CA'894). (Nishiyama)

Niedermann, et al. "Preparation of herbicidal heterocyclic carboxamides", Chemical Abstracts on-line, CA:122:187621, abs of WO 9,427,974 (December 8, 1994) (CA '621).

#### Grounds of Rejection

1. Claims 2-4, 10, 13-17 and 19 stand rejected under 35 U.S.C. § 103 as unpatentable over Suto in view of CA '849.

2. Claims 5-9, 11-14 and 19 stand rejected under 35 U.S.C. § 103 as unpatentable over Takeuchi in view of Suto and CA '621.

3. Claim 18 stands rejected under 35 U.S.C. § 103 as unpatentable over CA '894 in view of Suto.

We reverse as to all three grounds of rejection.

#### Background

The invention relates to a process for preparing arylamides of heteroaromatic acids by reacting heteroaromatic halogen compounds with aromatic amines and carbon monoxide in the presence of a base and a catalyst. According to appellants, they have found that unexpected advantages are achieved in the claimed

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processes when specific starting materials are used in combination with a narrow band of catalysts. See Appeal Brief, Paper No. 20, received May 10, 1999, page 19.

#### Discussion

The initial burden of presenting a prima facie case of obviousness rests on the examiner. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). In determining whether an invention is obvious, the examiner must consider: (1) the scope and content of the prior art; (2) the differences between the prior art and the claimed invention; (3) the level of ordinary skill in the art; and (4) any objective considerations that may present. Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 466-467 (1966). "Where an obviousness determination is based upon a combination of prior art references, there must be some teaching, suggestion or incentive supporting the combination." In re Geiger, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987).

#### 1. Rejection of claims 2-4, 10, 13-17 and 19 as unpatentable over Suto in view of CA '849.

The examiner relies on Suto as disclosing a method for preparing arylamides by reaction of an aromatic chloride in the presence of carbon monoxide, an amine and a base. Examiner's

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Answer, Paper No. 21, mailed June 9, 1999, page 3. The examiner further relies on Suto as teaching the claimed catalyst. Id. The examiner acknowledges that although Suto discloses an aromatic chloride which includes pyridine chloride and that the starting material may be substituted on the ring, Suto does not specifically disclose that the substituent may be phenoxy as required by the claims. Id. The examiner also notes that Suto discloses an amide in example 8 which, when substituted by a phenoxy group, is a known herbicide as disclosed in CA '849. Id., page 4.

According to the examiner, "[i]t would have been obvious to one ordinarily skilled in the art to have used the process of Suto to prepare compounds with phenoxy substituent as in CA '849 with the expectation of obtaining a useful herbicide. Although the Suto example gives a specific pyridine chloride, its isomers are not excluded since they are obvious variants." Examiner's Answer, page 4, second paragraph.

Appellants maintain that

[w]hile Suto discloses generically the starting organic (aromatic or heterocyclic) chloride and gives examples thereof, Suto et al. does not give any examples of appellants' starting material. This is important because catalytic activity is unpredictable, Suto et al. does not disclose appellants' starting material, and, accordingly, the catalytic activity or lack

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thereof is unpredictable.

Appeal Brief, page 7. With respect to CA '849 appellants note that while the reference discloses that R<sup>1</sup> can be aryl, there is no specific disclosure of R<sup>1</sup> being phenol. Further, appellants urge that the examiner has improperly relied upon hindsight reasoning in combining these references. Id., pages 13-14.

In order to prevent the impermissible use of hindsight, "the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed." In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (emphasis added). It is not sufficient for the examiner to rely on a high level of ordinary skill in the art to provide the motivation for combining the teachings of the cited references. See id. Rather the examiner must explain "what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination." Id.

In the present case, the examiner has merely identified where in the prior art the individual components of the claimed invention are taught and then relied on his own explanation as to

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why it would have been obvious to have combined these components to achieve the claimed invention. See Ecolochem, Inc. v. Southern California, 227 F.3d 1361; 56 USPQ2d (Fed. Cir. 2000) (quoting In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000)) ("[A] rejection cannot be predicated on the mere identification . . . of individual components of claimed limitations.") At best, the examiner has established that it might be "obvious to try" Suto's process to prepare compounds such as those disclosed in CA '849. See In re Merck & Co., Inc., 800 F.2d 1091, 1097, 231 USPQ 375, 379 (Fed. Cir. 1986).

Accordingly, we agree with appellants that the examiner has failed to establish a prima facie case of obviousness and the rejection is reversed.

2. Rejection of claims 5-9, 11-14 and 19 under 35 U.S.C. § 103 as unpatentable over Takeuchi in view of Suto and CA '621.

The examiner relies on Takeuchi as disclosing a process for the carbonylation of N heteroaromatic chlorides including pyrazines. Examiner's Answer, page 4. The examiner notes that Takeuchi differs from the claimed invention in that there are no substituents on the pyrazine ring. Id., pages 4-5. Suto is relied on as disclosing "a similar preparation using the a [sic] pyridine chloride, carbon monoxide, a base and a

palladium complex of 1,4-bis(diphenylphosphino)butane . . . [t]he substituent on the Suto chloropyridine ring may be an oxy-carbon group." Id., page 5. The examiner relies on CA '621 as disclosing that phenoxy substituted pyridine or pyridine amides are known herbicides. Id.

The examiner maintains that it would have been obvious to one of ordinary skill in the art to have made phenoxy substituted heterocyclic herbicides as taught by CA '621 using the processes disclosed in Takeuchi or Suto. Id. Appellants argue, inter alia, that "Takeuchi et al. (and Suto et al.) does not teach or suggest the use of heterocyclic compounds having a -OR ring substituent." Appeal Brief, page 16.

As discussed in connection with the previous ground of rejection, the examiner's rejection is completely devoid of "particular findings" as to why one of ordinary skill in the art, with no knowledge of the claimed invention, would have used the teachings of Suto and Takeuchi to produce the compounds disclosed in CA '621. Further, as pointed out by appellants, CA '621 references a different process for preparation of the disclosed compounds. See Appeal Brief, page 17. The examiner has failed to identify any teaching or suggestion in the prior art which would have motivated one of ordinary skill in the art to have

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substituted the referenced process with the process of Takeuchi or Suto.

Accordingly, the examiner has failed to establish a prima facie case of obviousness and the rejection is reversed.

3. Rejection of claim 18 under 35 U.S.C. § 103 as unpatentable over CA '894 in view of Suto.

In rejecting claim 18, the examiner relies on essentially the same reasoning used in conjunction with the first ground of rejection. See Examiner's Answer, pages 5-6. In particular, the examiner maintains that "[i]t would have been obvious to one ordinarily skilled in the art to have used the process [sic] CA '894 to have prepared the phenoxy substituted compound and to have continued with a Suto carbonylation to have made the analogous Suto amide herbicide." Id., page 6.

The examiner does not reference any teachings in the prior art which support this conclusion of obviousness. Rather, the examiner merely states that "[t]he references are combinable since they are both from the same field of endeavor (i.e., producing herbicides)." Id. Reliance on "common knowledge and common sense" do not fulfill the requirement to provide reasons in support in findings of obviousness. In re Thrift 298 F.3d 1357, 1364, 63 USPQ2d 2002, 2006 (Fed. Cir. 2002) (quoting In re Lee, 277 F.3d 1338, 1344-45, 61 USPQ2d 1430, 1435



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(Fed. Cir. 2002)).

Accordingly, the examiner has failed to establish a prima facie case of obviousness, and the rejection is reversed.

In sum, we reverse as to all three grounds of rejection on the basis that the examiner has failed to establish a prima facie case of obviousness.

REVERSED

PAUL LIEBERMAN	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
ROMULO H. DELMENDO	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
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LINDA R. POTEATE	)	
Administrative Patent Judge	)	

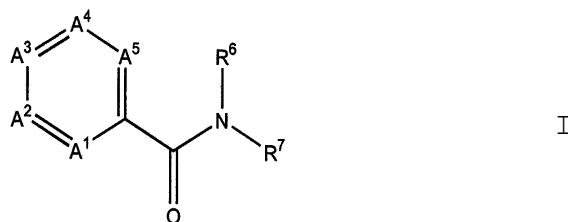
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APPENDIX  
Claims 18 and 19

18. A process for the preparation of an amide of formula:



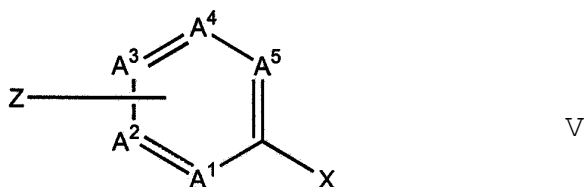
wherein:

A<sup>1</sup> is nitrogen or CR<sup>1</sup>,  
A<sup>2</sup> is nitrogen or CR<sup>2</sup>,  
A<sup>3</sup> is nitrogen or CR<sup>3</sup>,  
A<sup>4</sup> is nitrogen or CR<sup>4</sup>, and  
A<sup>5</sup> is nitrogen or CR<sup>5</sup>,

with the proviso that at least one of the ring members is A<sup>1</sup> to A<sup>5</sup> is nitrogen and that two nitrogen atoms are not bonded directly to one another;

R<sup>1</sup> to R<sup>5</sup>, if present, independently of one another are each a member of the group consisting of hydrogen, C<sub>1-4</sub>-alkyl or aryl, also one of the substituents R<sup>1</sup> to R<sup>5</sup> being a group of the formula -OR, in which R is an aromatic radical, a heteroaromatic radical, an aromatic radical substituted with at least one lower alkyl, halogenated [sic] alkyl, lower alkoxy, lower alkylthio or alkanesulfonyl, or (p-) fluorophenyl, or a heteroaromatic radical substituted with at least one lower alkyl, halogenated alkyl, lower alkoxy, lower alkylthio or alkanesulfonyl; R<sup>6</sup> is hydrogen or C<sub>1-4</sub>-alkyl; and

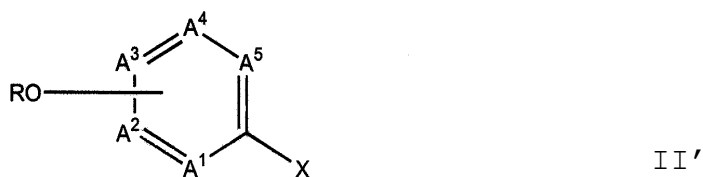
$R^7$  is an aromatic radical, a heteroaromatic radical, an aromatic radical substituted with at least one lower alkyl, halogenated alkyl, lower alkoxy, lower alkylthio or alkanesulfonyl, or (p-) fluorophenyl, or a heteroaromatic radical substituted with at least one lower alkyl, halogenated alkyl, lower alkoxy, lower alkylthio or alkanesulfonyl in a first step, reacting a dihalide of the formula:



wherein  $A^1$  to  $A^5$  are as defined above, with the proviso that one of the radicals  $R^1$  to  $R^5$  on a carbon atom adjacent to a ring nitrogen atom is replaced with Z, Z is chlorine, bromine or iodine, and X independently thereof is chlorine, [sic] bromine or iodine, with an aromatic or heteroaromatic hydroxyl compound of formula:



wherein R is as defined above, to give a (hetero)aryloxy halogen compound of formula:

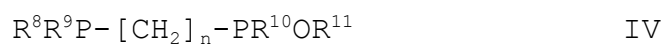


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wherein  $A^1$  to  $A^5$  and  $X$  are as defined above, and, in a second step, said product is reacted with carbon monoxide and an amine of formula:

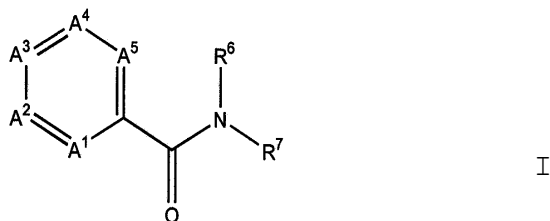


wherein  $R^6$  and  $R^7$  are as defined above, in the presence of a complex of palladium with a diphosphine of formula:



wherein  $R^8$  to  $R^{11}$  independently of one another are each phenyl or substituted phenyl, and  $n$  is 3 or 4, with a base other than said primary or secondary amine.

19. A process for the preparation of an amide of formula:



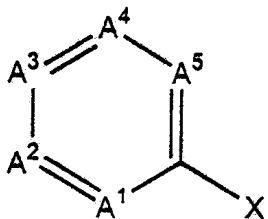
wherein:

$A^1$  is nitrogen or  $CR^1$ ,  
 $A^2$  is nitrogen or  $CR^2$ ,  
 $A^3$  is nitrogen or  $CR^3$ ,  
 $A^4$  is nitrogen or  $CR^4$ , and  
 $A^5$  is nitrogen or  $CR^5$ ,

with the proviso that at least one of the ring members is A<sup>1</sup> to A<sup>5</sup> is nitrogen and that two nitrogen atoms are not bonded directly to one another;

R<sup>1</sup> to R<sup>5</sup>, if present, independently of one another are each a member selected from the group consisting of hydrogen, C<sub>1-4</sub>, -alkyl or aryl, also one of the substituents R<sup>1</sup> to R<sup>5</sup> being a group of the formula -OR, in which R is an aromatic radical, a heteroaromatic radical, an aromatic radical substituted with at least one member being selected from the group consisting of lower alkyl, halogenated alkyl, lower alkoxy, lower alkylthio or alkanesulfonyl, or (p-) fluorophenyl, or a heteroaromatic radical substituted with at least one member being selected from the group consisting of lower alkyl, halogenated alkyl, lower alkoxy, lower alkylthio or alkanesulfonyl; R<sup>6</sup> is hydrogen or C<sub>1-4</sub>-alkyl; and

R<sup>7</sup> is an aromatic radical, a heteroaromatic radical, an aromatic radical substituted with at least one member selected from the group consisting of lower alkyl, halogenated alkyl, lower alkoxy, lower alkylthio and alkanesulfonyl, or (p-) fluorophenyl, or a heteroaromatic radical substituted with at least one member being selected from the group consisting of lower alkyl, halogenated alkyl, lower alkoxy, lower alkylthio and alkanesulfonyl, comprising reacting a halogen compound of the formula:



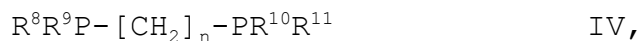
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wherein A<sup>1</sup> to A<sup>5</sup> are as defined above and X is chlorine, bromine or iodine, with carbon monoxide and a primary or secondary amine of the formula:



wherein R<sup>6</sup> and R<sup>7</sup> are as defined above, in the presence of a complex of palladium with a diphosphine of the formula:



in which R<sup>8</sup> and R<sup>11</sup> independently of one another are each phenyl or substituted phenyl, and n is 3 or 4, with a base other than said primary or secondary amine.